



General Terminal Corporation



SW10
Users Manual

GTC PN 970004-001
PRINTING: JULY 1982

COPYRIGHT 1981

GENERAL TERMINAL CORPORATION
14831 FRANKLIN AVE. TUSTIN, CA. 92680-7282
(714) 730-0123
TWX 910-595-2428

All rights reserved. No part of this publication may be reproduced in any form without written permission from General Terminal Corporation.

The following SW10 documents are available from GIC:

SW10 Users Manual	PN 970004-001
SW10 Maintenance Manual	PN 970005-002
SW10 Reference Card	PN 970008-001
TV Monitor Manual	PN 05018-001

DISCLAIMER

The material in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. General Terminal Corporation makes no representation or warranties with respect to this manual.

Printed in USA

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1-1
1.2 VIDEO DISPLAY AND CHARACTERISTICS.....	1-1
1.2 SW10 KEYBOARD	1-4
1.3 MESSAGES AND INDICATORS	1-5
1.4 SW10 KEYBOARD CODES	1-6
1.5 PRINTER PORT	1-6
1.6 CONNECTING KEYBOARD	1-7
1.7 CONNECTING HOST/MODEM	1-7
2.0 OPERATING PARAMETERS	2-1
2.1 SETUP MODE	2-1
2.2 SETUP FEATURE DEFINITIONS	2-3
3.0 PROGRAMMING	3-1
3.1 CONVENTIONS	3-1
3.2 COMMAND FORMAT	3-1
3.3 COMMAND SEQUENCES	3-1
3.4 VT52 COMMAND CODES	3-8
3.5 IGNORED COMMANDS	3-10
3.6 SPECIAL COMMANDS	3-10
APPENDIX A	INTERNATIONAL KEYBOARDS
APPENDIX B	JUMPER LOCATIONS

LIST OF FIGURES/TABLES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
1-1	SW10 Specifications	1-1
1-2	SW10 Keyboard Layout	1-3
1-3	SW10 Alphabetic Key Codes	1-8
1-4	SW10 Non-Alphabetic Key Codes Generated ...	1-9
1-5	SW10 Operation Keys	1-10
1-6	SW10 Numeric Keypad Codes	1-10
1-7	SW10 Function Key Codes	1-11
1-8	SW10 Cursor Key Codes	1-11
1-9	SW10 Interface Connectors	1-12
1-10	SW10 Character Set	1-13
1-11	Special Graphics Characters	1-14
2-1	Parameter List	2-1
3-1	ASCII Code Chart	3-11
3-1.a.	SW10 International Changes to ASCII Codes..	3-12
3-2	Alphabetized Command Summary	3-13



SW10 TERMINAL

This page intentionally left blank

1.0 INTRODUCTION

The SW10 is a desk-top, compact, lightweight video display terminal providing input/output capabilities for a Host computer via standard RS-232 communication links. As keys are pressed on the detached keyboard, equivalent binary codes are sent to the host computer and the characters are displayed on the screen. Binary information sent from the host computer is translated by internal circuitry and displayed on the screen as its corresponding recognizable character. Thus, the terminal provides a human interface to a computer system.

Internally, the SW10 is designed for full compatibility with the ANSI 3.41 and ANSI 3.64 data and command structures. Although not a direct emulation of the DEC VT-100, the SW10 is a low cost compatible alternative for those users not requiring 132 characters per line or Double-wide/Double-high video presentation.

For those users currently writing or planning to write supporting applications for terminals, standardizing on the ANSI 3.64 command structures offers a machine/manufacture independence previously unavailable. The SW10 supports ANSI 3.64 command structures.

The SW10 provides a high resolution, non-glare, 12" display monitor housed in a heavy duty molded plastic enclosure. A separate heavy duty molded plastic enclosure houses the keyboard allowing operator placement for convenience.

The keyboard has a layout similar to a standard typewriter and additionally supplies a separate grouping of numeric keys enabling high speed numeric entry.

The advanced design of the SW10 has eliminated the need for configuration toggle switches. Configuration control is performed directly from the keyboard during SETUP mode, and the resulting information may be permanently stored away and "remembered" even after power is turned off. During SETUP mode, the operator is presented with configuration choices presented in English, eliminating the need to refer to "bits and bytes" in a separate manual. The SW10 offers many operator conveniences which are detailed throughout this manual.

PHYSICAL CHARACTERISTICS

	DISPLAY	KEYBOARD
HEIGHT	11.5" (29cm)	2.5" (6.4cm)
WIDTH	13" (33cm)	17" (41cm)
DEPTH	12" (30cm)	8" (20cm)
WEIGHT	22 lbs (10kg)	4 lbs (1.8kg)
VOLTAGE/FREQ	105-135 Vac	50/60Hz 61 Watts
TEMPERATURE (C)	5 to 40 Oper/-30 to 65 Stor	
HUMIDITY	5% to 80% non-condensing	

DISPLAY CHARACTERISTICS

SCREEN SIZE	12" Diagonal
VIEWING AREA	8.25" x 6.25"
SCREEN CAPACITY	1920 Characters
DISPLAY MATRIX	80 x 24 + Status
SCREEN PHOSPHOR	P31(Grn) or P4(Wht)
CHARACTER SET	128 ASCII
CHARACTER MATRIX	5x9 on 7x10 field
CURSOR	Reverse Video Block

MAIN PORT INTERFACE

RS-232C Asynchronous
Selectable XON/XOFF
50 - 9600 Baud Full Duplex
Space/Mark/Even/Odd Parity

PRINTER PORT INTERFACE

RS-232C Asynchronous
Screen Print
Printer Controller Mode
Handles PRINTER BUSY

SETUP MODE PARAMETERS

#01> MODE	ONLINE/LOCAL
#02> BAUD	50 THRU 9600
#03> PARITY	SPACE/MARK/EVEN/ODD
#04> MODE	VT100/VT52/PROGRAM
#05> AUTO NEW LINE	ON/OFF
#06> AUTO WRAP	ON/OFF
#07> LINE END	STD/DEC
#08> CURSOR BLINK	ON/OFF
#09> CAPS LOCK	ON/OFF
#10> MARGIN BELL	ON/OFF
#11> SHIFT 3	#/ENGLISH POUND
#12> POWER FREQUENCY	50/60 HERTZ
#13> PRINTER BUSY	LOW/HIGH
#14> KEYBOARD	1 / 2
#15> PASS THRU	ONLY/DISPLAY
#16> AUTO REPEAT	ON/OFF
#17> PROTECTED PRINT	ON/OFF
#18> AUTO XON	ENABLE/DISABLE
#19> LOCAL ECHO	ON/OFF
#20> KEY CLICK	ON/OFF
#21> SLOW SCROLL	ON/OFF
#22> REVERSE VIDEO	ON/OFF
#23> BRIGHTNESS	1 THRU 16

Figure 1-1 SW10 Specifications

1.1 VIDEO DISPLAY AND CHARACTERISTICS

A summary of the characteristics of the SW10 is given in Figure 1-1.

Screen

The screen display is a high resolution 12" diagonal display in green phosphor (P31). Visual presentation is green characters on a dark background, or in the case of reverse video screen, dark characters on a green background. In either rendition, P31 offers higher visual contrast and thus less eye fatigue for the operator. The etched faceplate helps reduce glare associated with ambient lighting.

Character Matrix

Upper case letters (and lower case letters without descenders) are formed by a 5x7 dot matrix on a 7x10 field. Lower case letters with descenders (g, j, p, q, y) are formed by a 5x9 dot matrix on a 7x10 field giving true visual descenders. A method of increasing this resolution called dot-sliding is used to round off corners.

Display Format

The display format useable by the Host or operator is 24 lines each containing a maximum of 80 characters for a total of 1920 characters on the screen. A 25th display line is useable only by the terminal to show current terminal status and to give English prompting messages during SETUP mode. The status line may be toggled off or on by pressing <CTRL><SETUP>. The physical area used on the face of the screen display is 6.25" high by 8.25" wide.

Cursor

The cursor is displayed as a rectangular, non-destructive reverse video 7x10 block. During SETUP mode, the cursor can be selected as solid or blinking.

Scrolling and Split Screen Scrolling

The SW10 is in a permanent scroll mode. This means that any command which causes the cursor to attempt to move from line 24 into line 25 will cause the contents of the screen to shift

upward one line, i.e., data in line 1 is lost, data in line 2 moves into line 1, and so forth with data from line 24 shifting into line 23. The cursor is then resting in line 24 which is now blank and ready to accept new information.

During Split Screen Scrolling any contiguous group of lines may be scrolled while the remaining lines on the screen remain stationary. For example, a group of "operator helps" could be displayed on lines 1-4 and on lines 23 and 24. Lines 5 through 22 could be designated as split screen scroll. In this case, the data on lines 1, 2, 3, 4, 23, and 24 would remain fixed, while the data on lines 5 through 22 would scroll as normal. The cursor cannot inadvertently be placed by the operator into the non-scrolling area. An attempt to move the cursor below line 22 would cause an upward scroll of line 5-22, losing line 5 and placing the cursor in a new blank line 22, while no change took place in the fixed lines. The cursor may be placed into the non-scrolling areas by the Cursor Position Direct command.

Character Set

The SW10 is able to display the complete 128 ASCII character set. This includes 32 special graphics characters. Figure 1-10 shows the complete character set. Figure 1-11 shows the special graphics set and the associated ASCII characters. The 32 control codes are displayed as alphabetic characters in the selected attribute to make them easily discernable during PROGRAM mode.

Video Attributes

Individually, each character may be displayed in full intensity or half intensity. This allows specific screen data to be highlighted. In lieu of half/full intensity, a hardware jumper wire may change the video attribute to normal/reverse video. Only one of these may be chosen, i.e., selecting one precludes selecting the other. Refer to Appendix B for location of the hardware jumper.

Collectively, all characters on the screen may be presented as green on black, or conversely, as black on green by selecting REVERSE VIDEO ON during SETUP mode.

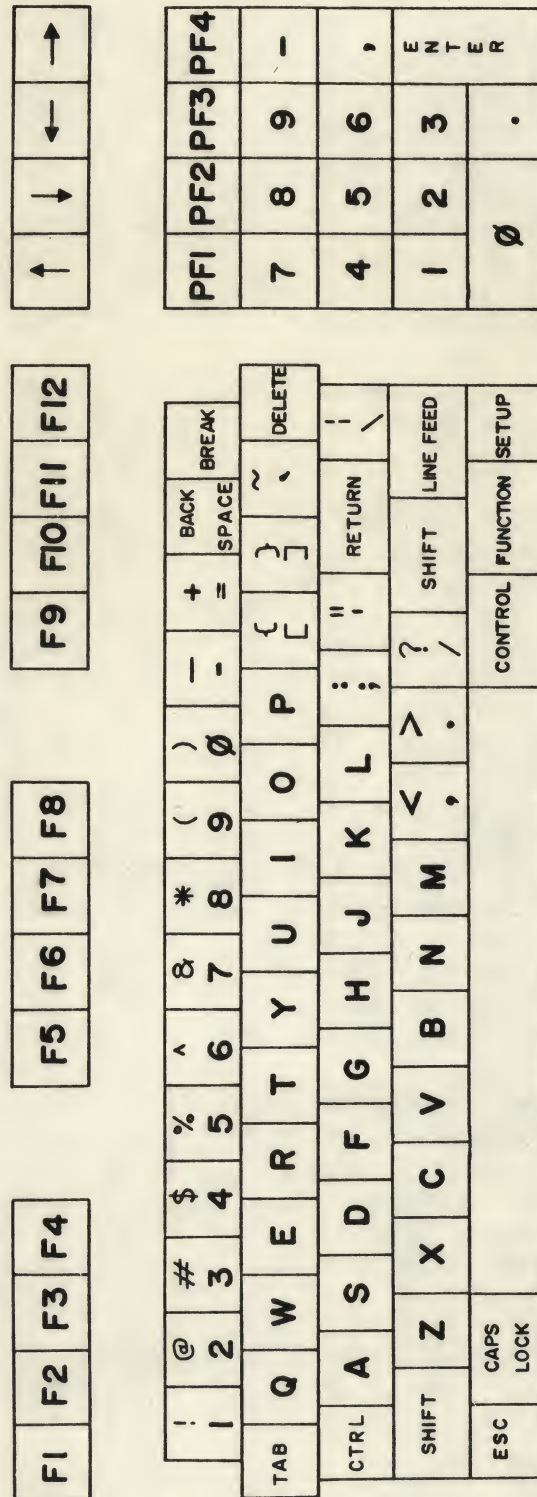


Figure 1-2. SW10 Keyboard Layout

1.2 SW10 KEYBOARD

The following paragraphs describe the detached keyboard and normal status line visual indicators.

- <ARROWS>** These keys normally transmit commands to the host to cause movement of the cursor up, down, left, or right. By means of a special command, each of these keys may cause the SW10 to transmit a code which has a different meaning to your system. Consult your local operating procedures for the meaning of these keys when in this special mode. The transmitted codes are shown in Figure 1-8.
- <BACKSPACE>** This key transmits a backspace code and moves the cursor one position to the left.
- <BREAK>** Pressing the <BREAK> key causes the transmission line to be forced to its zero state for approximately .23 seconds. If either <SHIFT> key is down, the time is increased to approximately 3.5 seconds. Data Terminal Ready (DTR) is also de-asserted during this interval. At the conclusion of the 3.5 second interval, DTR will again be asserted. The <BREAK> key has no function when the SW10 is in LOCAL mode.
- <CAPS>** This key enables the transmission of upper case alphabetic characters only. All numeric and special symbol keys remain in lower case. The message "CAPS" is displayed in the status line when active.
- CLEAR SCREEN** Simultaneously pressing <SHIFT> then <FUNCTION> causes the screen to be cleared and the cursor sent to HOME. Clearing the screen using <SHIFT><FUNCTION> is a local operation and no notification is sent to the host computer.
- <CONTROL>** When pressed in combination with another key, <CTRL> causes the SW10 to transmit a code which has a special meaning to your system. Figures 1-3 and 1-4 show actual codes generated. If pressed by itself, no code is generated. Simultaneously pressing <CTRL> then <SETUP> will cause the status line (line 25) to toggle on or off.
- <DELETE>** This key causes the SW10 to transmit a delete character code to the host system. The deleted character may or may not be erased from the screen dependent upon host interaction.
- <ENTER>** This key generates a carriage return code only. It will not include a LINE FEED command.
- <ESC>** This key transmits a code which normally has a special meaning to your system. In many applications, it tells your system to treat the next keys pressed as a command sequence.
- <FUNCTION>** This key alternately sends XON/XOFF codes to the host computer. When first pressed, this key stops the transmission of data from the computer to the SW10. When pressed a second time, transmission resumes from where it was stopped. Thus SCROLL ON and SCROLL OFF are controlled by <FUNCTION>. In SETUP mode, pressing <SHIFT><FUNCTION> starts a function key programming sequence. See Section 3, Function Key Programming.
- <LINEFEED>** This key transmits a linefeed code (hex 0A).
- <RETURN>** This key may transmit either a Carriage Return (hex 0D) or both a Carriage Return and Line Feed (hex 0D 0A) depending on SETUP mode selections.

- <SETUP>** Pressing this key will cause the SW10 to enter SETUP mode. During SETUP mode, terminal characteristics may be permanently or temporarily changed. See Section 2.0 for configuration options during SETUP mode. Simultaneously pressing **<CONTROL>** then **<SETUP>** toggles the status line on or off.
- <SHIFT>** When pressed, this key enables the upper case function of all keys. If a key does not have an upper case function the **<SHIFT>** key will be disregarded. Pressing the **<SHIFT>** key by itself causes no code to be transmitted. Simultaneously pressing **<SHIFT>** then **<FUNCTION>** clears the screen locally, i.e., no code is sent to the host computer. **<SHIFT>** **<FUNCTION>** during SETUP mode starts a function key programming sequence.
- <TAB>** This key transmits a tab code.

AUTO REPEATING

All keys are auto repeating except for the ESC, TAB, SHIFT, CAPS LOCK, FUNCTION, CARRIAGE RETURN, and SETUP keys. Also the Control key and any key pressed along with it will not auto repeat.

NUMERIC KEYPAD

The numeric keypad is layed out to match a normal calculator or adding machine keyboard. The number, comma, period, and dash keys generate the same character as the corresponding key on the main keyboard.

- <ENTER>** This key performs the same function as the **<RETURN>** key. If "Auto New Line" is active, the **<ENTER>** key will send a carriage return and a line feed (hex 0D 0A).
- <PF1>**
<PF2>
<PF3>
<PF4> Each of these keys generate a code which may have special meaning to your system. The transmitted codes are shown in Figure 1-6.

Consult your local operating procedure for any special operating procedures for any special operations performed by pressing thes keys.

An optional command from the host can place the numeric pad in the KEYPAD APPLICATION MODE. In this mode the numeric pad keys no longer send the character engraved on the keycap but instead send a special code. These codes are shown in Figure 1-6. The action taken by the host upon receipt of these codes is determined by the application program. Consult your local operating procedures for details.

1.3 MESSAGES AND INDICATORS

The following paragraphs describe the messages or indicators presented on line 25 during normal operation, i.e., NOT during SETUP mode.

CAPS

The message "caps" is displayed on the status line to indicate all alphabetic characters will be displayed and transmitted in upper case.

CHARACTER INSERT

The "insert char mode" message lights on the status line to show that characters will be inserted starting at the active cursor position rather than overwriting the existing data.

L1-L4 INDICATORS

Indicators L1, L2, L3, and L4 are displayed on the status line and may be turned on and off by the host. Consult your local operating procedures for the meaning of each indicator.

LOCAL MESSAGE

The message "local" displays on the status line to show that the terminal is offline and cannot communicate with the host device. In local mode, the keyboard remains active and all characters typed are placed on the screen but are not transmitted to the host computer.

ONLINE MESSAGE

The message "online" displays on the status

line to show that the SW10 is online and ready to transmit or receive messages.

AUDIBLE INDICATORS (TONES)

There are two audible alarms associated with the SW10: a short tone (click), and a long tone (beep).

Short Tone - The click is sounded by the terminal whenever a key is pressed, with the following exceptions:

- a. The <SHIFT>, <FUNCTION> and <CONTROL> keys do not generate any keyclick.
- b. If the keyclick feature has been turned off in SETUP mode.

Long Tone - The beep is sounded by the terminal to indicate one of the following conditions:

- a. A bell code was received from the host computer.
- b. The cursor is eight characters away from the right margin (if the margin bell feature is enabled).
- c. The SW10 has successfully completed its internal diagnostics.
- d. Three beeps to signal an error.

1.4 SW10 KEYBOARD CODES

The following paragraphs describe the codes sent to the host computer as keys are pressed (online).

ALPHABETIC KEY CODES

The SW10 will transmit the lowercase code unless either or both of the SHIFT keys are down, or unless the CAPS message is displayed on the status line. When in CAPS mode, only the 26 alphabetic keys are automatically shifted to upper case. All possible codes generated are shown in Figure 1-3.

NON-ALPHABETIC KEY CODES

All possible codes generated by the non-alphabetic keys on the main keyboard are shown in Figure 1-4.

CONTROL KEY CODES

The CTRL key is used in conjunction with other

keys on the keyboard to generate control codes. The codes generated are shown in Figures 1-3 and 1-4.

OPERATION KEY CODES

There are several operational keys on the keyboard. These keys along with comments and codes generated are shown in Figure 1-5.

NUMERIC KEYPAD CODES

The keys located on the numeric keypad normally transmit the codes for the numbers, decimal point, minus sign, comma, and ENTER (CARRIAGE RETURN). However, a separate command from the host may cause alternate code sequences to be transmitted. These codes for VT52 mode and for VT100 mode are shown in Figure 1-6.

FUNCTION KEYS F1-F12 CODES

The twelve function keys labeled F1 through F12 can generate 48 unique fixed codes as shown in Figure 1-7. In addition, the unshifted <F1> thru <F12> may be specially programmed with up to 20 characters each. See FUNCTION KEY PROGRAMMING in Section 3.

CURSOR CODES

The four keys above the numeric pad (labeled with arrows) transmit escape sequence commands. If the host echoes these back to the SW10, cursor motion up, down, left, or right may take place. A separate command may be used by the host to place these keys into CURSOR KEY MODE, in which case the codes are modified as shown in Figure 1-8.

1.5 PRINTER PORT

The printer port on the rear of the SW10 allows attachment of an RS-232 serial printer. The baud rate of the printer port will be the same baud rate that was selected for the main port during SETUP mode. Figure 1-9 shows the mechanical and electrical connections of both RS-232 ports.

Three ANSI 3.64 MEDIA COPY commands are implemented. Two of these commands control the flow of data to the printer port.

PRINT PAGE - Sends all screen data to the printer port if **PROTECTED PRINT** is selected as **OFF** during **SETUP** mode. If **PROTECTED PRINT** is **ON**, full intensity data will be sent to the printer port and any half intensity (or reverse video) data will be sent to the printer port as spaces. In both cases, a 250 millisecond delay will be sent at the end of each line along with a Carriage Return and a Line Feed (CR/LF).

PRINT INTERFACE ON/OFF - If **PRINT INTERFACE** is **OFF**, received data will be displayed on the screen. If **PRINT INTERFACE** is **ON**, received data will be routed directly to the printer port bypassing the screen until an **ESC X** is received.

The third **MEDIA COPY** command, **PAGE SEND**, sends screen data to the host computer. These command sequences are listed in Section 3 in alphabetical order along with explanations.

1.6 CONNECTING KEYBOARD

The keyboard uses a standard RS-232 type

connector which plugs into the terminal display on the **FRONT** just below the screen.

* * * CAUTION * * *

It is possible to incorrectly attach the keyboard on the back of the terminal display box. The terminal will not operate and may be damaged if this is done. Be sure to attach the keyboard connector to the **FRONT** of the terminal just below the screen.

1.7 CONNECTING HOST/MODEM

The Main Port is the connector on the left side looking at the rear of the terminal. It is a **FEMALE DB-25** connector. If it is necessary to attach to a host connector, an adapter cable converting **FEMALE** to male is optionally available.

The right-hand connector (viewed from the rear) is for attaching a local printer. Data is sent in one direction only, that is, from the terminal to the printer. If the printer sends acknowledgements or data, it is not received by the terminal. The terminal is capable of monitoring a "busy" line on pin 20 to assist in data transfer control.

KEY	<SHIFT> NOT PRESSED		<SHIFT> PRESSED		CAPS MODE		<CTRL> PRESSED	
	HEX	OCTAL	HEX	OCTAL	HEX	OCTAL	HEX	OCTAL
A	61	141	41	101	41	101	01	001 (SOH)
B	62	142	42	102	42	102	02	002 (STX)
C	63	143	43	103	43	103	03	003 (ETX)
D	64	144	44	104	44	104	04	004 (EOT)
E	65	145	45	105	45	105	05	005 (ENQ)
F	66	146	46	106	46	106	06	006 (ACK)
G	67	147	47	107	47	107	07	007 (BEL)
H	68	150	48	110	48	110	08	010 (BS)
I	69	151	49	111	49	111	09	011 (HT)
J	6A	152	4A	112	4A	112	0A	012 (LF)
K	6B	153	4B	113	4B	113	0B	013 (VT)
L	6C	154	4C	114	4C	114	0C	014 (FF)
M	6D	155	4D	115	4D	115	0D	015 (CR)
N	6E	156	4E	116	4E	116	0E	016 (SO)
O	6F	157	4F	117	4F	117	0F	017 (SI)
P	70	160	50	120	50	120	10	020 (DLE)
Q	71	161	51	121	51	121	11	021 (DC1)
R	72	162	52	122	52	122	12	022 (DC2)
S	73	163	53	123	53	123	13	023 (DC3)
T	74	164	54	124	54	124	14	024 (DC4)
U	75	165	55	125	55	125	15	025 (NAK)
V	76	166	56	126	56	126	16	026 (SYN)
W	77	167	57	127	57	127	17	027 (ETB)
X	78	170	58	130	58	130	18	030 (CAN)
Y	79	171	59	131	59	131	19	031 (EM)
Z	7A	172	5A	132	5A	132	1A	032 (SUB)

Figure 1-3. SW10 Alphabetic Key Codes

KEY	<SHIFT> NOT PRESSED		<SHIFT> PRESSED		<CONTROL> PRESSED		<SHIFT> <CONTROL> PRESSED	
	HEX	OCTAL	HEX	OCTAL	HEX	OCTAL	HEX	OCTAL
SPACE	20	040	20	040	00	000 (NUL)	00	000 (NUL)
1 (!)	31	061	21	041	11	021 (DC1)	01	001 (SCH)
2 (@)	32	062	40	100	12	022 (DC2)	00	000 (NUL)
3 (#)	33	063	23	043	13	023 (DC3)	03	003 (ETX)
4 (\$)	34	064	24	044	14	024 (DC4)	04	004 (EOT)
5 (%)	35	065	25	045	15	025 (NAK)	05	005 (ENQ)
6 (^)	36	066	5E	136	16	026 (SYN)	1E	036 (RS)
7 (&)	37	067	26	046	17	027 (ETB)	06	006 (ACK)
8 (*)	38	070	2A	052	18	030 (CAN)	0A	012 (LF)
9 (')	39	071	28	050	19	031 (EM)	08	010 (BS)
0 (')	30	060	29	051	10	020 (DLE)	09	011 (HT)
- (')	2D	055	5F	137	0D	015 (CR)	1F	037 (US)
= (+)	3D	075	2B	053	1D	035 (GS)	0B	013 (VT)
[(')	5B	133	7B	173	1B	033 (ESC)	1B	033 (ESC)
] (')	5D	135	7D	175	1D	035 (GS)	1D	035 (GS)
` (~)	60	140	7E	176	00	000 (NUL)	1E	036 (RS)
; (')	3B	073	3A	072	1B	033 (ESC)	1A	032 (SUB)
' (')	27	047	22	042	07	007 (BEL)	02	002 (STX)
\ (')	5C	134	7C	174	1C	034 (FS)	1C	034 (FS)
, (<)	2C	054	3C	074	0C	014 (FF)	1C	034 (FS)
. (>)	2E	056	3E	076	0E	016 (SO)	1E	036 (RS)
/ (?)	2F	057	3F	077	0F	017 (SI)	1F	037 (US)

Figure 1-4. SW10 Non-Alphabetic Key Codes Generated

KEY	CODE GENERATED		COMMENTS
	HEX	OCTAL	
TAB	09	011 (HT)	No code - only Local operation No code - modifies code of other keys.
CAPS LOCK			
SHIFT			
ESCAPE CONTROL	1B	033 (ESC)	No code - modifies code of other keys
BACKSPACE BREAK	08	010 (BS)	No code - DTR drop = .23 secs W/<SHIFT> DTR drop = 3.5 secs.
DELETE	7F	177 (DEL)	Generates OD/OA (CR/LF) if ANL selected
RETURN	OD	015 (CR)	
LINE FEED FUNCTION SETUP	OA 11/13	012 (LF) 021/023	Toggles XON/XOFF (DC1/DC3) No code - only Local operation Generates XOFF if enabled & needed
SHIFT & FUNCTION CONTROL & SETUP			No code - Clears screen Locally No code - Toggles Status Line Display ON and OFF locally

Figure 1-5. SW10 Operation Keys

KEY	VT100	VT100 KEYPAD	VT52	VT52 KEYPAD
	NORMAL	APPLICATION MODE	NORMAL	APPLICATION MODE
PF1	ESC O P	ESC O P	ESC P	ESC P
PF2	ESC O Q	ESC O Q	ESC Q	ESC Q
PF3	ESC O R	ESC O R	ESC R	ESC R
PF4	ESC O S	ESC O S	ESC S	ESC S
0	0	ESC O p	0	ESC ? p
1	1	ESC O q	1	ESC ? q
2	2	ESC O r	2	ESC ? r
3	3	ESC O s	3	ESC ? s
4	4	ESC O t	4	ESC ? t
5	5	ESC O u	5	ESC ? u
6	6	ESC O v	6	ESC ? v
7	7	ESC O w	7	ESC ? w
8	8	ESC O x	8	ESC ? x
9	9	ESC O y	9	ESC ? y
.	.	ESC O n	.	ESC ? n
,	,	ESC O l	,	ESC ? l
-	-	ESC O m	-	ESC ? m
ENTER	RETURN	ESC O M	RETURN	ESC ? M

Figure 1-6. SW10 Numeric Keypad Codes

KEY	NOT <SHIFT>	<SHIFT>	WITH <CONTROL>	WITH <SHIFT> <CONTROL>
F1	ESC[=a	ESC[=A	ESC[=m	ESC[=M
F2	ESC[=b	ESC[=B	ESC[=n	ESC[=N
F3	ESC[=c	ESC[=C	ESC[=o	ESC[=O
F4	ESC[=d	ESC[=D	ESC[=p	ESC[=P
F5	ESC[=e	ESC[=E	ESC[=q	ESC[=Q
F6	ESC[=f	ESC[=F	ESC[=r	ESC[=R
F7	ESC[=g	ESC[=G	ESC[=s	ESC[=S
F8	ESC[=h	ESC[=H	ESC[=t	ESC[=T
F9	ESC[=i	ESC[=I	ESC[=u	ESC[=U
F10	ESC[=j	ESC[=J	ESC[=v	ESC[=V
F11	ESC[=k	ESC[=K	ESC[=w	ESC[=W
F12	ESC[=l	ESC[=L	ESC[=x	ESC[=X

Figure 1-7 SW10 Function Key Codes

Cursor Key (arrow)	ANSI Mode Cursor Key Mode RESET	ANSI Mode Cursor Key Mode SET	VT52 Mode
UP	ESC[A	ESC O A	ESC A
DOWN	ESC[B	ESC O B	ESC B
RIGHT	ESC[C	ESC O C	ESC C
LEFT	ESC[D	ESC O D	ESC D

Figure 1-8. SW10 Cursor Key Codes

Transmitted Data (TD).....<—.....
 Received Data (RD).....—>.....
 Request To Send (RTS).....<—.....
 Clear To Send (CTS).....—>.....
 Data Set Ready (DSR).....—>.....
 GROUND.....
 Carrier Detect (CD).....—>.....

MAIN PORT
 RS-232C CONNECTOR

0₁₃ 0 0 0 0₈ 0₇ 0₆ 0₅ 0₄ 0₃ 0₂ 0₁

0₂₅ 0₂₄ 0₂₃ 0 0 0₂₀ 0₁₇ 0 0 0₁₄

-: -: +: : +:

-Receive Current Loop.....—>.....
 -Transmit Current Loop.....<—.....
 +Receive Current Loop.....—>.....
 Data Terminal Ready (DTR) ..<—.....
 +Transmit Current Loop.....<—.....

Receive Data (RD).....—>.....
 Transmit Data (TD).....<—.....
 Request To Send (RTS).....—>.....
 Clear To Send (CTS).....<—.....
 Data Set Ready (DSR).....<—.....
 GROUND.....
 Carrier Detect (CD).....<—.....

PRINTER PORT
 RS-232C CONNECTOR

0₁₃ 0 0 0 0₈ 0₇ 0₆ 0₅ 0₄ 0₃ 0₂ 0₁

0₂₅ 0 0 0 0₂₀ 0₁₉ 0 0 0 0₁₄

Data Terminal Ready (DTR).....—>.....
 Secondary Request to Send (SRIS) ..—>.....

Figure 1-9. SW10 Interface Connectors

	0	1	2	3	4	5	6	7
0	♦	—		0	0	P	~	p
1	✱	—	!	1	A	Q	a	q
2	4	—	"	2	B	R	b	r
3	F	—	#	3	C	S	c	s
4	\$	F	\$	4	D	T	d	t
5	4	+	%	5	E	U	e	u
6	*	L	&	6	F	V	f	v
7	±	T	'	7	G	W	g	w
8	4	|	(	8	H	X	h	x
9	Y	Σ	)	9	I	Y	i	y
A	J	Σ	*	:	J	Z	j	z
B	7	π	+	;	K	L	k	<
C	r	7	,	<	L	\	l	l
D	L	E	—	=	M	I	m	>
E	+	.	.	>	N	^	n	~
F	—		/	?	O	—	o	||||

Figure 1-10. SW10 Character Set

HEX CODE	ASCII CHARACTER	GRAPHICS CHARACTER	CHARACTER NAME
5F	-		BLANK
60	\	◊	DIAMOND
61	a	▣	CHECKER BOARD
62	b	HT	HORIZONTAL TAB
63	c	FF	FORM FEED
64	d	CR	CARRIAGE RETURN
65	e	LF	LINE FEED
66	f	°	DEGREE
67	g	±	PLUS/MINUS
68	h	NL	NEW LINE
69	i	VT	VERTICAL TAB
6A	j	┐	LOWER RIGHT CORNER
6B	k	┌	UPPER RIGHT CORNER
6C	l	└	UPPER LEFT CORNER
6D	m	┘	LOWER LEFT CORNER
6E	n	+	INTERSECT LINES
6F	o	—	SCAN LINE 1
70	p	—	SCAN LINE 3
71	q	—	SCAN LINE 5
72	r	—	SCAN LINE 7
73	s	—	SCAN LINE 9
74	t	┌	LEFT "T"
75	u	┐	RIGHT "T"
76	v	└	LOWER "T"
77	w	┘	UPPER "T"
78	x	|	VERTICAL LINE
79	y	≤	LESS THAN/EQUAL TO
7A	z	≥	GREATER THAN/EQUAL TO
7B	{	π	PI
7C	|	≠	NOT EQUAL
7D	}	£	ENGLISH POUND SIGN
7E	~	.	CENTER DOT

Figure 1-11 Special Graphics Characters

2.0 OPERATING PARAMETERS

The current parameters controlling the SW10 may be modified by the operator during SETUP mode. Some of them may be changed by the host as shown in Figure 2-1.

CURRENT PARAMETERS

The parameter values currently defining terminal operations are stored in the terminal's main memory (RAM). These values may be changed by the operator at any time by entering SETUP mode. Some parameters have host commands, e.g., TABULATION CLEAR, AUTO REPEAT, AUTO WRAP, etc. The host computer may change these settings by issuing the corresponding command. Only the current parameters will be affected by a host command. The current parameters are temporary in that they are maintained only as long as power remains on the terminal.

PERMANENT PARAMETERS

The permanent parameter values are stored in non-volatile memory (NVM) and are loaded into the current parameter area (RAM) at power on time. To change the permanent parameters, the desired contents are selected in the current parameter area during SETUP time, and then may be written into the permanent parameter area using the SAVE (<SHIFT><S>) command. The host computer cannot alter the permanent parameter area; only the operator may store information into the permanent area during SETUP time.

DEFAULT PARAMETERS

The default parameters are those stored in NVM at the time of manufacture. The default condition of each parameter is underlined in Figure 2-1. These conditions will be automatically written into NVM if an NVM error occurs or if <SHIFT><D> is pressed while in SETUP mode.

2.1 SETUP MODE

The operator may place the terminal into SETUP mode by pressing the <SETUP> key. While the terminal is in SETUP mode, the data area of the screen will freeze, and the status line will be used for displaying SETUP information. Incoming data will be stored in an internal

buffer and XOFF will be sent to the host computer if enabled and needed. Upon entering

SETUP COMMANDS

<SHIFT><A>	-	Set Answerback
<SHIFT><C>	-	Change a setting
<SHIFT><D>	-	Load default parameters
<SHIFT><I>	-	Initialize
<SHIFT><M>	-	Display current settings
<SHIFT><R>	-	Recall permanent settings from NVM
<SHIFT><S>	-	Store current settings away as permanent settings in NVM
<SHIFT><T>	-	Display current tab settings
<SHIFT><V>	-	Display Rev Level
<SHIFT><FUNCTION>	-	Program Function Key

PARAMETER	SETTINGS	OPERATOR HOST	
		SETTABLE	SETTABLE
MODE	ONLINE/LOCAL	YES	NO
BAUD	50 THRU 9600	YES	NO
PARITY	SPC/MRK/EVN/ODD	YES	NO
MODE	VT100/VT52/PROG	YES	YES
AUTO NEW LINE	ON/OFF	YES	YES
AUTO WRAP	ON/OFF	YES	YES
LINE END	STD/DEC	YES	NO
CURSOR BLINK	ON/OFF	YES	NO
CAPS LOCK	ON/OFF	YES	NO
MARGIN BELL	ON/OFF	YES	NO
SHIFT 3	\$/ENGLISH POUND	YES	NO
POWER FREQUENCY	50/60 HERTZ	YES	NO
PRINTER BUSY	LOW/HIGH	YES	NO
KEYBOARD	1 / 2	YES	NO
PASSTHRU	ONLY/DISPLAY	YES	NO
AUTO REPEAT	ON/OFF	YES	YES
PROTECTED PRINT	ON/OFF	YES	NO
AUTO XON	ENABLE/DISABLE	YES	NO
LOCAL ECHO	ON/OFF	YES	NO
KEY CLICK	ON/OFF	YES	NO
SLOW SCROLL	ON/OFF	YES	YES
REVERSE VIDEO	ON/OFF	YES	YES
BRIGHTNESS	1 THRU 16 (8)	YES	NO
KEYPAD APPLICATION MODE		NO	YES
CURSOR KEY MODE		NO	YES
ORIGIN MODE		NO	YES
TAB FORMAT	1-80 COLUMNS	YES	YES
ANSWERBACK	1-20 CHARACTERS	YES	NO

Figure 2-1. Parameter List

SETUP mode, line 25 will display a summary of the SETUP commands; this is called the "initial" display. Entering SETUP mode and

changing parameters will not change the data displayed on the screen except for <SHIFT><M>, which will overwrite existing screen data to show current parameter settings. This allows the operator to enter SETUP mode at any time, even during online data entry, without affecting the data on the screen or disturbing the host computer. After exiting SETUP mode, the operator may continue with the previous operation.

SELECTING SETUP PARAMETERS

The SETUP parameters are kept in an internal list. The operator selects the parameter by stepping through this list, using the <SPACE> key or <BACKSPACE> key. Each time the <SPACE> or <BACKSPACE> key is pressed, the next or previous parameter and its setting is displayed on line 25. If the end of the list is reached, line 25 will return to the initial display. Figure 2-1 is a list of the SETUP mode parameters and their range of settings in the sequence they will be displayed on line 25.

CHANGING A SETUP PARAMETER

When the appropriate parameter is displayed on the status line, its current value may be changed by pressing the <SHIFT> and <C> key. Each time, the parameter will be toggled through its range of settings, one at a time. If the end of a range is reached, the setting is cycled back to the start of its range. For example: when brightness is displayed on the status line, pressing a <SHIFT><C> will cause the brightness setting to display values from 1 through 16. When the value 16 is reached, the next depression of <SHIFT><C> will cause a value of 1.

The terminal parameters entered in this manner are stored away as current terminal parameters. They will remain in effect until power is removed from the terminal or modified again during SETUP.

SAVING SETUP PARAMETERS

To store away any changes made during SETUP mode, press <SHIFT><S> while still in SETUP mode. This causes the current parameters (in RAM) to be stored away as permanent parameters (in NVM).

RECALLING SETUP PARAMETERS

To recall the permanent parameters while in SETUP mode, press the <SHIFT> and <R> keys.

INITIALIZING TERMINAL

During SETUP mode, the SW10 may be reset by pressing the <SHIFT> and <I> keys. This will cause the terminal to act as if its power had been cycled off and back on again. The internal diagnostic will again check out RAM and ROM and then sound a beep to signify testing is completed and the permanent parameters have been loaded.

SETTING/RESETTING TABS

To set or reset tabs while in SETUP mode, press the <SHIFT> and <T> keys. The display on line 25 will contain the sequence <1234567890> eight times to represent the terminal columns 1 thru 80, and current tab stop settings will be indicated by an asterisk instead of a number in each column. The cursor will start in column 1 and be displayed as reverse video. To set or reset a tab at any specific column, move the cursor to the desired column by pressing <SPACE> to move the cursor forward or <BACKSPACE> to move it backwards. When the cursor is in the desired column, pressing the <SHIFT> and <C> keys will toggle the tab setting in that column.

To clear or reset all the tabs with a single operation, press the <SHIFT> and <A> keys.

To exit the tab sequence, press the <SETUP> key. Line 25 will be restored to the initial SETUP display. Permanent storage of these tab settings may be accomplished in SETUP mode by pressing <SHIFT> and <S>.

SETTING ANSWERBACK MESSAGE

The SW10 answerback feature provides the terminal with the capability to identify itself to the host. The entire answerback sequence takes place automatically without affecting the screen or requiring operator action. The ENquire command (hex 05) from the host computer causes the terminal to send to the host computer the answerback message as currently stored in RAM.

The answerback message may be changed during SETUP mode by pressing <SHIFT><A>. Line 25 will display "A=" and a solid cursor.

Enter a single character that will not be used in the answerback message. This character will be used as a delimiter to start and terminate the message and will NOT be stored away as part of the message. After entering the delimiter character, enter the answerback message itself. The message may be up to 20 characters long and may include control characters. Any control characters entered will be displayed on the status line as reverse video. If 20 characters are entered, the answerback sequence will automatically terminate itself and store the message as entered. If the message is less than 20 characters long, type the delimiter character that was used to start the message. This character will NOT be stored and will only serve to terminate the entry sequence and cause the entered message to be stored.

Once the sequence is terminated the message is stored in the current parameter area and line 25 is restored to its previous SETUP mode display. To save the message permanently use the SAVE operation (<SHIFT><S>).

EXITING SETUP MODE

To exit SETUP mode, press the <SETUP> key. The terminal will return to its operating mode and line 25 will be restored to display terminal status messages.

2.2 SETUP FEATURE DEFINITIONS

This section describes each SETUP feature in detail and states how each feature affects the terminal.

MODE

ONLINE/LOCAL

Line/Local allows the operator to place the terminal in an online or a local (offline) condition. When the terminal is online, the message "online" is displayed on the status line and all characters typed on the keyboard are sent directly to the computer. Messages from the computer are displayed on the screen. In the local condition, the status line displays "local" and the terminal is electrically disconnected from the computer, messages are not sent to or received from the

computer, and characters typed at the keyboard are sent only to the screen.

BAUD RATE

50 thru 9600

Baud Rate determines the speed that characters will be transmitted between the terminal and the host computer or printer port. Baud Rates may be set from 50 baud up to 9600 baud.

PARITY

MARK/SPACE/EVEN/ODD

During SETUP, Parity can be set to Mark, Space, Even, or Odd. Parity, when set to Odd or Even, causes the SW10 to generate correct parity on transmissions, and to check for correct parity on received data. If a transmission error occurs, the SW10 can detect it and indicate it by placing a solid block character on the screen in place of the character with the error.

MODE

VT100, VT52, PROGRAM

Any of three operating protocols may be selected during SETUP.

VT-100 - terminal acts on a subset of the ANSI 3.64 commands and emulates most of the features of the DEC/VT-100 terminal. Double High/Wide and 132 columns are not supported.

VT-52 - Performs VT52 commands as listed in Section 3.4.

PROGRAM - In program mode, control codes are not acted on but instead are displayed on the screen. Control codes are represented visually in the selected attribute (half intensity or reverse video).

****CAUTION****

In PROGRAM mode, if the main port is not connected to anything (floating), a spacing condition exists and the SW10 will continuously display null characters on the screen.

AUTO NEW LINE

ON/OFF

Auto New Line enables the <RETURN> key on the terminal to function like the return key on a typewriter. When Auto New Line is ON, pressing the <RETURN> key generates the Carriage Return (CR) and Line Feed (LF) codes. When a Line

Feed code is received, the code is interpreted as a Carriage Return and Line Feed. If Auto New Line is OFF, the <RETURN> key only generates a CR code; an LF code only causes a Line Feed. NOTE: If double line feeds occur consistently, the host computer is performing this automatically and Auto New Line should be turned OFF.

AUTO WRAPON/OFF

When Auto Wrap is ON, the cursor will proceed from column 80 to column 1 of the next line as additional keys are pressed. When Auto Wrap is OFF, the cursor will remain in column 80 and additional keys pressed will overlay the character displayed at column 80. This is a local operation and no special code is sent to the host computer.

LINE ENDSTD/DEC

Line End considerations apply when Auto New Line is active. The DEC VT-100 has a unique handling of data when entered in the 80th column. The 80th character entered does not cause the cursor to move to column 1 of the next line. The 81st character entered causes the cursor to move to column 1, display the character, and stop in column 2. This mode of operation can be selected during SETUP by toggling LINE END DEC. For normal operation, when the cursor is in column 80 and another key is pressed, the new character is displayed in column 80 and the cursor is moved to column 1 of the next line, select LINE END STD during SETUP.

CURSOR BLINKON/OFF

The cursor shows where the next character will be entered on the screen. The cursor may be selected during SETUP as either a blinking or non-blinking reverse video block.

CAPS LOCKON/OFF

Selecting this feature causes the terminal to change any lower case character to an upper case character. All numeric and special symbol keys remain in lower case. "CAPS" is displayed on the status line to indicate this condition. CAPS is included in SETUP to allow the SW10 to enter CAPS mode at power up time. The <CAPS> key on the keyboard is always

operational regardless of the SETUP selection.

MARGIN BELLON/OFF

The Margin Bell is much the same as the bell on a typewriter. When the cursor is 8 characters from the end of the current line, the SW10 sounds a tone to alert the operator.

SHIFT 3#/£

The character above the <3> key is the American pound sign <#>. The character displayed on the screen can be selected between the American pound sign or the English pound sign at the user's preference during SETUP.

POWER FREQUENCY50/Hz/60Hz

The synchronization of the terminal for 50 Hertz or 60 Hertz is made at the factory by installing the correct jumper on the board. The changing of this parameter will NOT change the terminal between 50 Hertz or 60 Hertz operation. It is provided only as a notification to the user in the parameter settings. The internal times for the <BREAK> key will be changed if this setting is incorrect.

PRINTER BUSYLOW/HIGH

The line being monitored for a busy condition on the printer can be selected as PRINTER BUSY = HIGH or PRINTER BUSY = LOW. The level selected is determined by the printer being used. Most standard printers (i.e., DECWRITER) monitor pin 20 (DTR) and require a low signal. This is the selection at the time of manufacture. Use of a NEC SPINWRITER requires a hardware jumper change and a PRINTER BUSY = HIGH signal. The circuit board jumper E15 to E16 should be removed and a jumper from E15 to E17 installed. These jumpers are located next to auxiliary connector J2. Refer to Appendix B for location of the jumpers.

KEYBOARD1 OR 2

The keyboard 1 or keyboard 2 selection is for those users who wish to reverse the position of the TAB and ESCape keys. Keyboard 1 will have an ESCape key in the lower left corner and will generate a hex 1B when pressed. The TAB key, next to the "Q", will generate a hex 09.

In the keyboard 2 mode the positions of the keys and the codes generated will be reversed. Naturally, the key caps should be positioned to reflect the selected configuration.

PASSTHRUDISPLAY/ONLY

This parameter affects the routing of data received thru the Main port. If the DISPLAY condition is selected, all incoming data will be displayed. If ONLY is chosen, the received data will be passed thru to the printer port and not displayed on the screen.

AUTO REPEATON/OFF

If selected during SETUP, the Auto Repeat feature allows a key to be automatically repeated at a rate of 30 characters per second when the key is held down for more than 1/2 second. Auto Repeat affects all keys on the keyboard except <SETUP>, <ESCAPE>, <FUNCTION>, or <CTRL> key sequences.

PROTECTED PRINTON/OFF

PROTECTED PRINT set to ON during SETUP will identify all data on the screen as printable. If the PRINT PAGE command is executed, all data will be printed regardless of its video attribute. If PROTECTED PRINT is selected as OFF, any data with a video characteristic of half intensity (or reverse video) will be sent to the printer port as a space character. This allows a form, graphics, or special messages to be displayed but not printed.

AUTO XON/XOFFENABLE/DISABLE

The SW10 is capable of automatically generating the synchronizing codes XON and XOFF. The XOFF sequence is used to stop the transmission of data from the computer to the terminal; the XON sequence is used to resume transmission from the host computer to the terminal. If selected during SETUP, the SW10 will automatically generate the XOFF code when the internal buffer is nearly full or the terminal is placed in SETUP mode.

When either the buffer empties or the terminal is taken out of SETUP mode, the SW10 will automatically transmit the XON code to resume transmission from the host computer to the terminal.

If the host computer software does not support the XON/XOFF codes, data sent during buffer full conditions, or when the terminal is in SETUP mode, may be lost.

LOCAL ECHOON/OFF

Local Echo mode causes the screen to display a character as its key is pressed on the keyboard even though it is not being echoed back from the host computer. If dual characters are being displayed on the screen, turn Local Echo mode off during SETUP mode.

KEY CLICKON/OFF

The keyclick is a tone which is generated every time a key is pressed. The keyclick may be turned on or off during SETUP to suit the operator's preference. Research and experience has shown that an operator is more accurate when there is an audible feedback from the keyboard. The keyclick volume is not adjustable.

SLOW SCROLLON/OFF

Normally, new data is displayed as fast as it is received. At higher baud rates, it may be unreadable as it appears on the screen. During SETUP, if Slow Scroll is selected, new lines will be shown at a maximum rate of two per second. If XON/XOFF is enabled, codes will be sent to prevent overrun.

REVERSE VIDEOON/OFF

Reverse Video allows the operator to determine the background color of the screen. In the normal screen mode, the display contains light characters on a dark background; in the reverse screen mode the display contains dark characters on a light background.

BRIGHTNESS1 thru 16

Unlike most video terminals, the SW10 does not contain switches or knobs to adjust screen brightness. Instead, the SW10 electronically controls the screen brightness to one of 16 digital levels. During SETUP, the operator may select that level of screen brightness which is most pleasing and comfortable for viewing purposes.

This page intentionally left blank

3.0 PROGRAMMING

This section describes how the SW10 responds to command sequences. The command sequences may have been generated directly by the host computer, they may have been echoed back as a result of key depressions from the keyboard, or they may have been generated by the operator from the keyboard in an offline condition. It is important to note that when the terminal is online, no local action will occur due to operator keystroke commands, but rather by the terminal receiving the echoed command from the host computer.

3.1 CONVENTIONS

When reading the following command descriptions, these conventions should be noted:

- The ASCII code chart is presented in Figure 3-1.
- The following command sequences do NOT contain any embedded spaces; spaces are inserted to improve visual clarity only.
- Ps refers to a selective parameter used to identify the command further.
- Pn refers to a numeric parameter used to quantify the command further.
- Fn refers to the function identifier.
- The word *SETUP* in the left corner indicates that this operation may also be selected or modified during SETUP mode.
- Not all command sequences are executed by the terminal when they are entered from the keyboard but must be echoed back from the host computer. If the terminal is being used off-line, LOCAL ECHO should be ON.

3.2 COMMAND FORMAT

The SW10 recognizes command sequences as specified in the ANSI 3.64 standard. The command format is:

```

ESC  [  Pn  Fn
:    :    :    :
:    :    :    :
ESCAPE...:    :    :...Function identifier
Left bracket...:.....Parameter

```

Escape (hex 1B) initiates the command sequence.

Left Bracket (hex 5B) indicates a standard ANSI format.

Pn represents a numerical modifier (in decimal) often indicating how many times a command is to be repeated. It may also further define the effect of Fn. If no value is given, a default value of 0 or 1 is used, whichever is appropriate.

Fn is a character which indicates what function is to be performed.

This format covers most of the commands. Some commands, e.g., cursor positioning, requires two numeric parameters. The same format is followed but the numeric parameters are separated with a semicolon. For example, a command to move the cursor to line 4, column 4 would be:

ESC [4 ; 4 H

3.3 COMMAND SEQUENCES

ANSI/VT-52 MODE

SETUP	VT100 TO VT52	ESC [? 2 1
	VT52 TO VT100	ESC <

If in VT100 mode, the terminal can be changed to VT52 mode by ESC[?21. In VT52 modes, the VT100 command sequences as listed in Section 3.3 cannot be executed; only commands listed in Section 3.4 may be executed. To return to VT100 mode from VT52 mode, use the command ESC<.

AUTO REPEAT MODE

SETUP	(ON)	ESC [? 8 h
	(OFF)	ESC [? 8 l

This command sequence controls the automatic repeating of certain keys when they are depressed for more than .5 seconds. When AUTO REPEAT MODE is ON, the keys will automatically repeat after .5 seconds. When AUTO REPEAT MODE is OFF the keys will not automatically repeat.

AUTOWRAP MODE

SETUP	(ON)	ESC [? 7 h
	(OFF)	ESC [? 7 l

This command sequence controls character entry in column 80. When AUTOWRAP MODE is OFF, the cursor in column 80 will overlay succeeding

characters until a direct command is received to move the cursor. When AUTOWRAP is ON, the cursor, upon reaching column 80, will automatically go to the first position of the next line when the next character is received. A scroll will take place if appropriate.

BAUD RATE SELECT

SETUP ESC [> 0 Ps

The terminal baud rate can be set from the host by the sequence ESC [> 0 Ps where Ps is a baud rate identifier.

Ps	BAUD_RATE	Ps	BAUD_RATE
@	50 Baud	G	600 Baud
A	75 Baud	H	1200 Baud
B	110 Baud	I	2000 Baud
C	134.5 Baud	J	2400 Baud
D	150 Baud	K	4800 Baud
E	200 Baud	L	9600 Baud
F	300 Baud		

CURSOR BACKWARD

ESC [Pn D

This command sequence moves the active cursor position to the left. The distance moved is determined by the parameter Pn. If Pn is missing or equal to 0 or 1 the active position moves one position to the left. A parameter value of x moves the active position x positions to the left. An attempt to move the cursor beyond the left margin will result in the cursor stopping at the left margin, i.e., column 1.

CURSOR DOWN

ESC [Pn B

This command sequence moves the active cursor position downward within the same column position. If Pn is missing or equal to 0 or 1 the active position moves down one line. A parameter value of x moves the active position x lines down. An attempt to move the cursor below the bottom margin will result in the cursor stopping in the bottom margin line.

CURSOR FORWARD

ESC [Pn C

This command sequence moves the active cursor position Pn locations to the right. If Pn is

missing or equal to 0 or 1 the cursor will move one position to the right. A Pn value of x will move the cursor x positions to the right. An attempt to move the cursor beyond the right margin will cause the cursor to stop in the right margin, i.e., column 80.

CURSOR KEY MODE

(ON) ESC [? 1 h
(OFF) ESC [? 1 l

This command sequence selects which characters are sent when the four cursor arrow keys are pressed. When CURSOR KEY MODE is ON, the four cursor arrow keys will send application dependent sequences. When CURSOR KEY MODE is OFF, the four arrow keys will send ANSI cursor control commands. The actual characters sent are shown in Figure 1-8.

CURSOR POSITION DIRECT

ESC [Pn ; Pn H

This command sequence moves the active cursor position to the location specified by the two Pn parameters. The first parameter value (Pn) identifies which line, the second parameter value (Pn) identifies which column is to contain the active cursor. If Pn is not specified or is equal to 0, a default value of 1 will be used.

CURSOR POSITION REPORT

ESC [6 n

This command sequence, causes the terminal to send its active cursor position to the host computer. The character sequence sent to the host computer by the terminal is:

ESC [Pn ; Pn R

The first Pn will be a decimal value representing the line number and the second Pn will be a decimal value representing the column number.

CURSOR UP

ESC [Pn A

This command sequence moves the active cursor position upward the number of lines specified by the value of Pn. The column position is not affected. If Pn is missing or equal to 0 or 1 the cursor will move up one line. A Pn value

of x will move the cursor up x lines. An attempt to move the cursor above the top margin will cause the cursor to stop in the top margin line.

DELETE CHARACTER

ESC [Pn P

This command sequence causes characters to be deleted from the current line starting with the character at the cursor. If Pn is omitted or equal to 0 or 1, the character at the active cursor position is deleted. Pn equal to x deletes x characters to the right of the cursor counting the cursor. The effect of this command is limited to the current line.

DELETE LINE

ESC [Pn M

This command sequence causes the number of lines specified by the parameter Pn to be deleted. If Pn is missing or equal to 0 or 1, only the line containing the active cursor position is deleted. If Pn is equal to x, x lines will be deleted. Lines from below will move up within the region allowing this command to be used above, in, or below the scrolling region. As lines move up, new blank lines appear at the bottom of the region.

DEVICE ATTRIBUTES

ESC [0 c

This command sequence will cause the terminal to transmit its attributes to the host computer. The SW10 will transmit the following fixed response:

ESC [? 1 ; 0 c

DEVICE STATUS REPORT

ESC [5 n

This command sequence allows the host to request terminal status. The terminal will respond with either:

<u>RESPONSE</u>	<u>MEANING</u>
ESC [0 n	Terminal OK and ready
ESC [3 n	Terminal not OK

ERASE IN DISPLAY

ESC [Ps J

This command sequence causes specific characters to be erased from the screen display according to the value of the parameter Ps. In each case, the active cursor position does not change.

- Ps=0 Erase all characters from the active cursor up to and including the last position of the screen.
- Ps=1 Erase all characters from the start of the screen up to and including the active cursor position.
- Ps=2 Erase all of display.

ERASE IN LINE

ESC [Ps K

This command sequence causes specific characters to be erased from the current line according to the value of the parameter Ps. In each case, the active cursor position does not change.

- Ps=0 Erase all characters from the active cursor to end of line.
- Ps=1 Erase all characters from the beginning of the line up to and including the active cursor positions.
- Ps=2 Erase the entire line.

FUNCTION KEY CALL

ESC [< Ps

This command sequence allows a programmed function to be "called", ie, remotely pressed, from the host computer or another function key. When this sequence is executed by the terminal, the appropriate function key will respond just as if it had been pressed by an operator. The Ps character identifies the function key to be pressed as follows:

<u>Ps</u>	<u>Function Key</u>	<u>Ps</u>	<u>Function Key</u>
a	F1	g	F7
b	F2	h	F8
c	F3	i	F9
d	F4	j	F10
e	F5	k	F11
f	F6	l	F12

FUNCTION KEY PROGRAMMING***SETUP***

ESC [> Ps /text/

On power up, the function keys are loaded to the default values shown in Figure 1-7. Each unshifted function key <F1> thru <F12> may be loaded with up to a 20 character message. The sequence starts with ESC [followed by the key identifier selected from the following chart:

Ps	Function Key	Ps	Function Key
a	F1	g	F7
b	F2	h	F8
c	F3	i	F9
d	F4	j	F10
e	F5	k	F11
f	F6	l	F12

The next character received will be a delimiter, and may be any character not used within the text. A slash character (/) is often used. The delimiter is not stored away, and does not count as part of the 20 character limit. The characters received after the delimiter will be stored into the function key. After the 20th character is received, the sequence will automatically terminate, with any excess (over 20) characters treated as a normal data stream. If less than 20 characters are loaded, a delimiter character should be sent to terminate the sequence.

Function keys may be nested, i.e., one key may call another key by entering an ASCII US code (<CTRL>) followed by the key to be called. For example, US b loaded into F1 would call F2 as part of the F1 sequence.

A temporary delay to allow for asynchronous operations may also be loaded into a function key by entering US @. This will cause a one second delay (1.2 sec at 50Hz) each time it is encountered within a function key.

ASCII US followed by "a" thru "l" = call another function key

ASCII US followed by @ = one second delay

The function keys may be loaded with commands that alter terminal operations. For example:

<US>0 = Toggles LINE/LOCAL state.

<US>1 = Stops data from being routed to the screen when in PRINTER

CONTROLLER mode.

<US>2 = Allows data to be routed to the screen when in PRINTER CONTROLLER mode.

NOTE: Not all command sequences are executed by the terminal when they are entered from the keyboard but must be echoed back from the host computer. If the terminal is being used off-line, LOCAL ECHO should be ON.

Function Key loading from keyboard:

1. Enter SETUP mode by pressing <SETUP> key.
2. Simultaneously press <SHIFT><FUNCTION>. The status line will now show "load key = ?".
3. Press the function key which is to be programmed, <F1> thru <F12>. The key identifier will be entered on the status line.
4. Press a delimiter key which may be any key not used within the text itself. The slash character (/) is often used. The status line will now show an area 20 spaces long between the delimiters.
5. Enter the desired message. The sequence will automatically end when the 20th character is entered. If less than 20 characters are entered, press the delimiter key to terminate the message. Exit from SETUP will be automatic.
6. If an error was made while entering the text, the cursor left (<—) may be used to perform a backspace function allowing the operator to correct entry errors. The BACKSPACE key may not be used.

HORIZONTAL TABULATION SET***SETUP***

ESC H

This command sequence causes a Tab stop to be set in the active cursor column.

HORIZONTAL AND VERTICAL POSITION

ESC [Pn ; Pn f

This command sequence moves the active cursor position to the location specified by the two

Pn parameters. The first parameter value (Pn) identifies which line, the second parameter value (Pn) identifies which column is to contain the active cursor. If Pn is not specified or is equal to 0, a default of 1 will be used.

INDEX

ESC D

This command sequence causes the active cursor position to move down one line without changing the column position. If the active cursor position is in the bottom margin line, a scroll up is performed.

INSERT LINE

ESC [Pn L

This command sequence causes the number of blank lines specified by Pn to be inserted. If Pn is missing or equal to 0 or 1, one blank line will be inserted. Pn equal to x will insert x lines. New lines are placed starting at the active cursor line, and existing lines are shifted down, bounded by the bottom margin line of the region. This allows usage above, in, or below the scrolling region.

INSERT/REPLACEMENT MODE

(Insert) ESC [4 h
(Replacement) ESC [4 l

This command sequence affects incoming character display. When Replacement mode is selected (Insert mode reset), each incoming character will overlay the existing character at the active cursor position. When Insert mode is set, each incoming character causes all characters from the cursor to column 80 to shift right one position. The incoming character is then entered at the active cursor position. Any characters which are forced off the end of the line are lost.

INVOKE CONFIDENCE TEST

ESC [2 ; Ps y

This command sequence causes internal tests to be started and also allows automatic repeating of those tests. The parameter Ps identifies which test is to be run. For multiple operations Ps is calculated by adding, e.g., run both test 1 and 2 is Ps value of 3 (1+2=3), auto repeat test 2 is Ps 10 (2+8=10), etc.

Ps=1 Power up self test - ROM, RAM, NVM and keyboard
Ps=2 Data Loop Back (requires loop back connector)
Ps=8 Repeat selected test until failure or power off

KEYPAD APPLICATION MODE

ESC =

This command sequence causes application dependent sequences to be sent to the host computer when keys on the numeric keypad are pressed. This command does not affect the numeric keys in the main keyboard. The actual characters sent are shown in Figure 1-6.

KEYPAD NUMERIC MODE

ESC >

This command sequence resets KEYPAD APPLICATION MODE and allows the numeric keypad keys to send their normal ANSI 3.64 codes as shown in Figure 1-6.

LOAD INDICATOR

ESC [Ps q

This command sequence sets and resets the four indicators on the status line according to the value of Ps.

Ps=0 Turn off indicators 1 thru 4
Ps=1 Turn on indicator 1
Ps=2 Turn on indicator 2
Ps=3 Turn on indicator 3
Ps=4 Turn on indicator 4

If no Ps parameter is present, a value of 0 will be assumed.

NEXT LINE

ESC E

This command sequence causes the active cursor position to move to column 1 of the next line. If the active cursor position is in the bottom margin line, a scroll up is performed.

ORIGIN MODE

(ON) ESC [? 6 h
(OFF) ESC [? 6 l

This command sequence defines the location of line 1, column 1 on the screen when split

screen scrolling margins are active. Line and column numbers are relative to the screen. When ORIGIN MODE is OFF, the line 1/column 1 location is the upper left character position on the screen. The cursor may be positioned outside the top or bottom margins with a CURSOR POSITION DIRECT command. When ORIGIN MODE is ON, the line 1/column 1 location is the upper left character position within the margins. Line and column numbers are therefore relative to the current margin settings. The cursor cannot be positioned outside the top or bottom margins.

PAGE SEND

ESC [2 F

This command sequence causes the contents of the screen to be sent to the host computer. This command is identical to the PRINT PAGE command except that data is sent out the MAIN PORT instead of the PRINTER PORT.

PRINTER CONTROLLER ENABLE

ESC [5 F

This command sequence disables data going to the screen display. Instead, all data is routed out to the printer port. The screen is turned back on (and printer port off) when an ESC X is received in the data stream from the host.

PRINTER CONTROLLER DISABLE

ESC X

This command sequence will reset PRINT CONTROLLER ENABLE.

PRINT PAGE

ESC [0 F

This command sequence directs the contents of the screen to the printer port. If PROTECTED PRINT is OFF, all screen data will be sent to the printer port. If PROTECTED PRINT is ON, full intensity data will be sent to the printer port with any half intensity (or reverse video) data sent as spaces. A Carriage Return and Line Feed (CR/LF) along with a 250 millisecond delay will automatically occur at the end of each line. While the screen data is being sent to the printer port, any new data received from the host will back up in the receive buffer FIFO. If XON/XOFF is enabled, XOFF will be

sent prior to overflow. The PRINT PAGE function may be performed from the keyboard by the key combinations <SHIFT><ENTER>. No command sequence will be sent to the host.

REPORT TERMINAL PARAMETERS

ESC [<sol>;<par>;<nbits>;<xspeed>;
<rspeed>;<clkmul>;<flags> x

This data sequence is sent to the host computer by the SW10 in response to a REQUEST TERMINAL PARAMETERS command. This report is inhibited on power-up or reset. See REQUEST TERMINAL PARAMETERS command. The values for the various parameters are:

<sol>	= 2	This message is a report.
<sol>	= 3	This message is a report and the terminal is only reporting on request.
<par>	= 1	No parity set
<par>	= 4	Parity is set to ODD
<par>	= 5	Parity is set to EVEN
<nbits>	= 1	8 bits per character
<nbits>	= 2	7 bits per character
<xspeed>	= 0	50 baud
or	= 8	75 baud
<rspeed>	= 16	110 baud
	= 24	134.5 baud
	= 32	150 baud
	= 40	200 baud
	= 48	300 baud
	= 56	600 baud
	= 64	1200 baud
	= 80	2000 baud
	= 88	2400 baud
	= 104	4800 baud
	= 112	9600 baud

<clkmul> = 1 Bit rate multiplier is 16
<flags> = 0 No STP option

REQUEST TERMINAL PARAMETERS

ESC [Ps x

This command sequence causes the REPORT TERMINAL PARAMETERS message to be sent to the host computer. Ps indicates whether future reports may be made at the terminal's discretion.

Ps = 0 This message is a request for status and also allows the terminal to send unsolicited

reports. Causes <sol> = 2 in REPORT TERMINAL PARAMETERS message.

Ps = 1 This message is a request for status and from now on the terminal may report ONLY in response to a request. Causes <sol> = 3 in the REPORT TERMINAL PARAMETER message.

RESET MODES

ESC [? Ps;Ps;...;Ps l

This command sequence allows one or more SW10 terminal modes to be reset. Each mode to be reset is individually specified as a parameter (Ps) separated from any other parameters by a semicolon. The command sequence terminates with a lower case l. The mode identifiers (numbers) are listed under the SET MODE command.

RESET TO INITIAL STATE

SETUP ESC c

This command sequence causes the SW10 to perform a complete reset as if it had been powered off and then back on. The parameters stored in NWM (during SETUP mode) will become the active parameters.

RESTORE CURSOR

ESC 8

This command sequence causes the previously save cursor position, video attributes, and character set to be restored. See SAVE CURSOR.

REVERSE INDEX

ESC M

This command sequence causes the active cursor position to move one line up without changing the column position. If the active cursor position is in the top margin line, a scroll down is performed.

SAVE CURSOR

ESC 7

This command sequence causes the cursor position, video attributes, and character set to be saved. See SELECT CHARACTER SET and RESTORE CURSOR.

SCREEN MODE

SETUP	Reverse Video (ON)	ESC [? 5 h
	Reverse Video (OFF)	ESC [? 5 l

This command sequence controls the visual background of the screen display. When SCREEN MODE is ON, the screen will display characters as dark dots on a light green background. When SCREEN MODE is OFF, characters are displayed as light green dots on a dark background.

SCROLLING SLOW MODE

SETUP	(ON)	ESC [? 4 h
	(OFF)	ESC [? 4 l

This command sequence controls the speed at which new lines of data appear on the screen. When SCROLLING SLOW MODE is ON, new lines will appear at a maximum rate of 2 lines per second independent of the baud rate setting. XON/XOFF will be sent if applicable and enabled. This allows the operator to easily read information as it scrolls onto the screen. When SCROLLING MODE is OFF, new lines will appear at a maximum rate as determined by the baud rate setting. At high baud rates, the data may be difficult to read as it is scrolling onto the screen.

SELECT CHARACTER SET

ESC <sequence>

This command sequence allows selection between different displayable character sets. The power up default condition is ASCII set for both <CTRL O> and <CTRL N>.

<CTRL O>	<CTRL><N>
G0 set	G1 set

ESC (A ESC) A UK set

ESC (B ESC) B ASCII set

ESC (Ø ESC) Ø Special Graphics

SELECT GRAPHIC RENDITION

ESC [Ps m

This command sequence controls the visual attributes of the displayed character. The value of Ps determines the attribute of those characters, i.e., half intensity on reverse video. Instead of Half Intensity, a hardware jumper allows Reverse Video to be selected. See Appendix B.

Ps=0	Full Intensity
Ps=1	Half Intensity/Reverse
Ps=4	Half Intensity/Reverse
Ps=7	Half Intensity/Reverse

All other parameters are ignored.

SET MODE

ESC [? Ps;Ps;...;Ps h

This command sequence allows one or more SW10 terminal modes to be set. Each mode to be set is individually specified as a parameter (Ps) separated from any other parameters by a semicolon. The command sequence terminates with a lower case h.

Ps	Meaning
0	ignored
1	Cursor Key Mode
2	VT100/VT52 Mode
3	ignored
4	Scrolling slow
5	Screen mode
6	Origin mode
7	Auto Wrap mode
8	Auto Repeat mode
9	ignored

TABULATION CLEAR

SETUP ESC [Ps g

This command sequence resets tab stops according to the value of the parameter (Ps).

- Ps=0 Clear only the tab stop at the active cursor location.
- Ps=3 Clear all tab stops on screen.

TOP/BOTTOM MARGIN SET

ESC [Pn ; Pn r

This command sequence sets the top and bottom margins to define which contiguous screen lines will scroll. The first parameter (Pn) is the top line of the scrolling region. The second parameter (Pn) is the bottom line of the scrolling region. Lines located above the top scrolling margin and lines located below the bottom scrolling margin will remain fixed (do not move) on the screen. If no parameters are present, the entire screen will scroll.

TRANSMIT CHARACTER AT CURSOR

ESC 5

This command sequence causes the character at the active cursor position to be transmitted to the host computer. By positioning the cursor, any location on the screen may be transmitted to the host.

3.4 VT-52 COMMAND CODES

The following command sequences will be recognized when the terminal is in VT-52 Mode. ANSI 3.64 command sequences will not be recognized in this mode.

CURSOR DOWN

ESC B

This command sequence moves the active cursor position down one position without altering the horizontal position. If an attempt is made to move the cursor below the bottom margin, the cursor stops at the bottom margin.

CURSOR LEFT

ESC D

This command sequence moves the active cursor position one position to the left. If an attempt is made to move the cursor to the left of the left margin, the cursor stops at the left margin.

CURSOR RIGHT

ESC C

This command sequence moves the active cursor position one position to the right. If an attempt is made to move the cursor to the right of the right margin, the cursor stops at the right margin.

CURSOR UP

ESC A

This command sequence moves the active cursor position up one position without altering the horizontal position. If an attempt is made to move the cursor above the top margin, the cursor stops at the top margin.

CURSOR TO HOME

ESC H

This command sequence moves the cursor to the home position.

DIRECT CURSOR ADDRESS

ESC Y <L><C>

Move the cursor to the specified line <L> and column <C>. The line and column numbers are sent as ASCII codes whose values are the desired line or column number plus octal 037, e.g., an octal value of 040 refers to the first line or column, an octal value of 050 refers to the eighth line or column, etc.

ENTER ALTERNATE KEYPAD MODE

ESC =

The optional auxiliary keypad keys will send unique identifiable escape sequences for use by applications programs instead of the legends engraved on the keycap. The actual characters sent are shown in Figure 1-6.

ENTER ANSI MODE

SETUP VT52 to VT100 ESC <
 VT100 to VT52 ESC [? 2 1

When in VT52 mode, the command sequence ESC < causes the terminal to enter VT100 mode. The commands listed in section 3.4 will no longer be recognized. The command sequences in Section 3.3 will then be executable. All subsequent escape sequences will be interpreted according to ANSI Standards X3.64-1977 and X3.41-1974.

ENTER GRAPHICS MODE

ESC F

This command sequence causes the special line drawing character set to be used by the SW10.

ERASE TO END OF LINE

ESC K

This command sequence causes all characters from the active cursor position to the end of the current line to be erased. The active cursor position is not changed.

ERASE TO END OF SCREEN

ESC J

This command sequence causes all characters from the active cursor position to the end of the screen to be erased. The active cursor position is not changed.

EXIT ALTERNATE KEYPAD MODE

ESC >

This command sequence causes numeric keypad keys to send the ASCII codes for the characters engraved on the key. This is normal operating mode.

EXIT GRAPHICS MODE

ESC G

This command sequence causes the standard ASCII character set to be used.

IDENTIFY

ESC Z

This sequence causes the terminal to send its identifier escape sequence to the host. This sequence is: ESC / Z.

PRINT CONTROLLER OFF

ESC X

This command sequence will reset PRINT CONTROLLER ON.

PRINT CONTROLLER ON

ESC W

This command sequence disables data going to the screen display. Instead, all data is routed out to the printer port. The screen is turned back on (and printer port off) when an ESC X is received in the data stream from the host.

PAGE PRINT

ESC]

This command sequence causes all data displayed on the screen to be sent to the printer port. Trailing spaces on each line will be suppressed. A Carriage Return and Line Feed (CR/LF) will be sent at the end of each line. The terminal will pause for 250 milliseconds at the end of each line. While the screen data is

being sent to the printer port, any new data received from the host will back up in the receive buffer FIFO. If XON/XOFF is enabled, XOFF will be sent prior to overflow.

REVERSE LINE FEED

ESC I

This command sequence moves the active cursor position up one position without altering the column position. If the active cursor position is at the top margin, a scroll down is performed; line 24 scrolls off the bottom of the screen and line 1 is blank.

3.5 IGNORED COMMANDS

The following list of DEC commands will be ignored if received:

DECCOLM
DECINLM
DECDHL
DECDWL
DECSWL

3.6 SPECIAL COMMANDS

CLEAR SCREEN

<SHIFT><FUNCTION>

Pressing the <SHIFT> key then the <FUNCTION> key will erase the entire screen and place the cursor in the HOME position. This command cannot be executed in the SETUP mode.

DISPLAY REV LEVEL

SETUP

<SHIFT><V>

Pressing the <SHIFT> and <V> will cause the firmware revision level to be displayed on the status line. The format will be GTC P/N 940009 R=1.0. Pressing <SHIFT><V> again will return the terminal to SETUP mode.

STATUS LINE ON/OFF

<CONTROL><SETUP>

When not in SETUP mode, simultaneously pressing the <CONTROL> then <SETUP> keys will cause the status line to toggle on and off. The four load indicators will still be displayed if set even though the status line is turned off.

ASCII CODE CHART

Bit 7 —>					0	0	0	0	1	1	1	1
Bit 6 —>					0	0	1	1	0	0	1	1
Bit 5 —>					0	1	0	1	0	1	0	1
bit	bit	bit	bit	COLUMN —>								
4	3	2	1	ROW	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	Space	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	\$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	EIB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	A	LF	SUB	*	:	J	Z	j	z
1	0	1	1	B	VT	ESC	+	;	K	[	k	{
1	1	0	0	C	FF	FS	,	<	L	\	l	|
1	1	0	1	D	CR	GS	-	=	M	]	m	}
1	1	1	0	E	SO	RS	.	>	N	^	n	~
1	1	1	1	F	SI	US	/	?	O	_	o	DEL

Figure 3-1. ASCII Code Chart

When an international keyboard is installed on the SW10, the character generator is modified to display the proper symbol. AZERTY and QWERTZ use the same character generator as the U.S. character generator. An example of using the following figure: A hex 30 on the U.S. character generator will display a zero with a slash through it (see Figure 1-10). If Norwegian or Danish character generators are installed, a hex 30 will display a zero but no slash. Likewise, pressing the square O key on Danish or Norwegian will generate a hex 4F.

HEX CODE	23	24	30	40	4F	5B	5C	5D	5E	60	7B	7C	7D	7E
NORWEGIAN/DANISH			0											
SWEDISH/FINNISH			E											
INTERNATIONAL QWERTY														
FRENCH TYPEWRITER														
FRENCH AZERTY														
GERMAN														
SPANISH														
UNITED KINGDOM														

Figure 3-1.a. SW10 International Changes to ASCII Codes

ANSI COMMAND SUMMARY

ANSI/VT-52 MODE	ESC [? 2 1	KEYPAD NUMERIC MODE	ESC >
AUTO REPEAT MODE ON	ESC [? 8 h	LOAD INDICATOR	ESC [Ps q
AUTO REPEAT MODE OFF	ESC [? 8 l	NEXT LINE	ESC E
AUTOWRAP MODE ON	ESC [? 7 h	ORIGIN MODE ON	ESC [? 6 h
AUTOWRAP MODE OFF	ESC [? 7 l	ORIGIN MODE OFF	ESC [? 6 l
BAUD RATE SELECT	ESC [> 0 Ps	PAGE SEND	ESC [2 F
CURSOR BACKWARD	ESC [Pn D	PRINTER CONTROLLER ENABLE	ESC [5 F
CURSOR DOWN	ESC [Pn B	PRINTER CONTROLLER DISABLE	ESC X
CURSOR FORWARD	ESC [Pn C	PRINT PAGE	ESC [0 F
CURSOR KEY MODE ON	ESC [? 1 h	REPLACEMENT MODE	ESC [4 l
CURSOR KEY MODE OFF	ESC [? 1 l	REPORT TERMINAL PARAMETERS	ESC [<sol>;<par>; <nbits>;<xpeed>; <rspeed>;<clkmul>; <flags> x
CURSOR POSITION DIRECT	ESC [Pn;Pn H	REQUEST TERMINAL PARAMETERS	ESC [Ps x
CURSOR POSITION REPORT	ESC [6 n	RESET MODES	ESC [? Ps;Ps;..Ps
CURSOR UP	ESC [Pn A	RESET TO INITIAL STATE	ESC c
DELETE CHARACTER	ESC [Pn P	RESTORE CURSOR	ESC 8
DELETE LINE	ESC [Pn M	REVERSE INDEX	ESC M
DEVICE ATTRIBUTES	ESC [0 c	SAVE CURSOR	ESC 7
DEVICE STATUS REPORT	ESC [5 n	SCREEN MODE ON	ESC [? 5 h
ERASE IN DISPLAY	ESC [Ps J	SCREEN MODE OFF	ESC [? 5 l
ERASE IN LINE	ESC [Ps K	SCROLLING SLOW MODE ON	ESC [? 4 h
FUNCTION KEY CALL	ESC [< Ps	SCROLLING SLOW MODE OFF	ESC [? 4 l
FUNCTION KEY PROGRAMMING	ESC [> Ps/text/	SELECT CHARACTER SET	ESC <sequence>
FUNCTION KEY DELAY	ESC [< @	SELECT GRAPHIC RENDITION	ESC [Ps m
HORIZONTAL TAB SET	ESC H	SET MODE	ESC [? Ps;Ps;..Ps h
HORIZONTAL/VERTICAL POS. INDEX	ESC [Pn;Pn f	TABULATION CLEAR	ESC [Ps g
INSERT LINE	ESC [Pn L	TOP/BOTTOM MARGIN SET	ESC [Pn;Pn r
INSERT/MODE	ESC [4 h	TRANSMIT CHARACTER AT CURSOR	ESC 5
INVOKE CONFIDENCE TEST	ESC [2;Ps y		
KEYPAD APPLICATION MODE	ESC =		

VT-52 COMMAND CODES

CURSOR DOWN	ESC B	ERASE TO END OF LINE	ESC K
CURSOR LEFT	ESC D	ERASE TO END OF SCREEN	ESC J
CURSOR RIGHT	ESC C	EXIT ALTERNATE KEYPAD MODE	ESC >
CURSOR UP	ESC A	EXIT GRAPHICS MODE	ESC G
CURSOR TO HOME	ESC H	IDENTIFY	ESC Z
DIRECT CURSOR ADDRESS	ESC Y <L><C>	PRINT CONTROLLER OFF	ESC X
ALTERNATE KEYPAD MODE	ESC =	PRINT CONTROLLER ON	ESC W
ANSI MODE (52 TO 100)	ESC <	PAGE PRINT	ESC]
ENTER GRAPHICS MODE	ESC F	REVERSE LINE FEED	ESC I

SPECIAL COMMANDS

CLEAR SCREEN	<SHIFT><FUNCTION>
DISPLAY REV LEVEL	<SHIFT><V>
TURN STATUS LINE OFF/ON	<CTRL><SETUP>

Figure 3-2. Alphabetized Command Summary

This page intentionally left blank

F1 F2 F3 F4				F5 F6 F7 F8				F9 F10 F11 F12				↑ ↓ ← →							
! @ # \$ % ^ & * () - + BACK BREAK | 2 3 4 5 6 7 8 9 Ø - = SPACE																PFI PF2 PF3 PF4			
TAB Q W E R T Y U I O P { } ~ DELETE [] ^ _																7 8 9 -			
CTRL A S D F G H J K L ; : " ' RETURN \																4 5 6 ,			
SHIFT		Z	X	C	V	B	N	M	< .	> /	SHIFT		LINE FEED		1 2 3 ENTER				
ESC		CAPS LOCK										CONTROL		FUNCTION		SETUP		Ø .	

SW10 UNITED STATES

F1 F2 F3 F4				F5 F6 F7 F8				F9 F10 F11 F12				↑ ↓ ← →					
! " £ ¢ ¥ & ' ( ) _ = ~ | BREAK																	
TAB Q W E R T Y U I O P , { BACK SPACE DELETE																	
CTRL A S D F G H J K L ; ' " RETURN }																	
SHIFT		Z	X	C	V	B	N	M	<	>	?	/	SHIFT	LINE FEED			
ESC		CAPS LOCK										CONTROL		FUNCTION		SETUP	

PFI	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø		.	

SW10 UNITED KINGDOM

F1 F2 F3 F4				F5 F6 F7 F8				F9 F10 F11 F12				<div>↑</div> <div>↓</div> <div>←</div> <div>→</div>							
<div>! " # \$ % & ' () _ = ~ ^ @ BREAK</div> <div>→ Q W E R T Y U I O P ; , { [BACK SPACE DELETE</div> <div>CTRL A S D F G H J K L Ñ * : ← }</div> <div>SHIFT Z X C V B N M < > ? / SHIFT ↓</div> <div>ESC CAPS LOCK<div></div>CONTROL FUNCTION SETUP</div>																<div>PFI PF2 PF3 PF4</div> <div>7 8 9 -</div> <div>4 5 6 ,</div> <div>1 2 3 ENTER</div> <div>Ø .</div>			

SW10 INTERNATIONAL SPANISH

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→			
!	"	#	\$	%	&	'	(	)	Ø	-	~	|	BREAK	PFI	PF2	PF3	PF4	
1	2	3	4	5	6	7	8	9	0	P	@	[	BACK SPACE	DELETE	7	8	9	-
CTRL	Q	S	D	F	G	H	J	K	L	M	:	←	]		4	5	6	,
SHIFT	W	X	C	V	B	N	;	<	>	?	/	SHIFT	↓		1	2	3	ENTER
ESC	CAPS LOCK									CONTROL	FUNCTION	SETUP			Ø	.		

SW10 INTERNATIONAL AZERTY

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→
----	----	----	----	----	----	----	----	----	-----	-----	-----	---	---	---	---

!	"	£	↓	%	&	'	(	)	—	=	é	..	BREAK	
|	2	3	4	5	6	7	8	9	Ø	-	°	^		
→	A	Z	E	R	T	Y	U	I	O	P	à	û	BACK SPACE	DELETE
CTRL	Q	S	D	F	G	H	J	K	L	M	⋮	←	;	
SHIFT	W	X	C	V	B	N	<	+	>	?	/	SHIFT	↓	
ESC	CAPS LOCK									CONTROL	FUNCTION	SETUP		

PF1	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø	.		

SW10 INTERNATIONAL FRENCH AZERTY

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→
----	----	----	----	----	----	----	----	----	-----	-----	-----	---	---	---	---

1 &	2 €	3 ..	4 ,	5 (	6 ê	7 è	8 !	9 ç	Ø	#	< â	> û	BREAK
→	A	Z	E	R	T	Y	U	I	O	P	â à	↑ î	BACK SPACE	DELETE
CTRL	Q	S	D	F	G	H	J	K	L	M	ç ù	←	* -	
SHIFT	W	X	C	V	B	N	?	:	/	+ =	SHIFT	↓ ↑		
ESC	CAPS LOCK									CONTROL	FUNCTION	SETUP		

PFI	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø	.		

SW10 INTERNATIONAL FRENCH TYPEWRITER

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→
1	2	3	4	5	6	7	8	9	0	-	=	^	BACK SPACE	DELETE	
→	Q	W	E	R	T	Y	U	I	O	P	@	{	BACK SPACE	DELETE	
CTRL	A	S	D	F	G	H	J	K	L	;	:	←	→		
SHIFT	Z	X	C	V	B	N	M	<	>	?	/	SHIFT	↑	↓	
ESC	CAPS LOCK									CONTROL	FUNCTION	SETUP			

PFI	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø	.		

SW10 INTERNATIONAL QWERTY

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→
1	2	3	4	5	6	7	8	9	0	-	=	~	BACK SPACE	DELETE	
→	Q	W	E	R	T	Z	U	I	O	P	@	{	BACK SPACE	DELETE	
CTRL	A	S	D	F	G	H	J	K	L	;	:	←	→		
SHIFT	Y	X	C	V	B	N	M	<	>	?	/	SHIFT	↑	↓	
ESC	CAPS LOCK									CONTROL	FUNCTION	SETUP			

PFI	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø	.		

SW10 INTERNATIONAL QWERTZ

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→
1	2	3	4	5	6	7	8	9	0	/	=	?	BACK SPACE	DELETE	
→	Q	W	E	R	T	Z	U	I	O	P	Ü	* +	BACK SPACE	DELETE	
CTRL	A	S	D	F	G	H	J	K	L	Ö	Ä	←	→		
SHIFT	Y	X	C	V	B	N	M	;	:	-	SHIFT	↑	↓		
ESC	CAPS LOCK									CONTROL	FUNCTION	SETUP			

PFI	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø	.		

SW10 INTERNATIONAL GERMAN

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→	
!	"	#	\$	%	&	'	(	)	=	?	~	>	BREAK		
→	Q	W	E	R	T	Y	U	I	□	P	Å	⌵	BACK SPACE	DELETE		
CTRL	A	S	D	F	G	H	J	K	L	Æ	Ø	←	↵			
SHIFT	Z	X	C	V	B	N	M	;	:	—	SHIFT	↓				
ESC	CAPS LOCK								CONTROL	FUNCTION	SETUP			Ø	.	ENTER

SW10 INTERNATIONAL DANISH

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→
!	"	#	\$	%	&	'	(	)	=	?	~	≥	BREAK		
→	Q	W	E	R	T	Y	U	I	□	P	Å	⌵	BACK SPACE	DELETE	
CTRL	A	S	D	F	G	H	J	K	L	Ø	Æ	←	*/		
SHIFT	Z	X	C	V	B	N	M	;	:	-	SHIFT	↓			
ESC	CAPS LOCK								CONTROL	FUNCTION	SETUP				

PFI	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø	.		

SW10 INTERNATIONAL NORWEGIAN

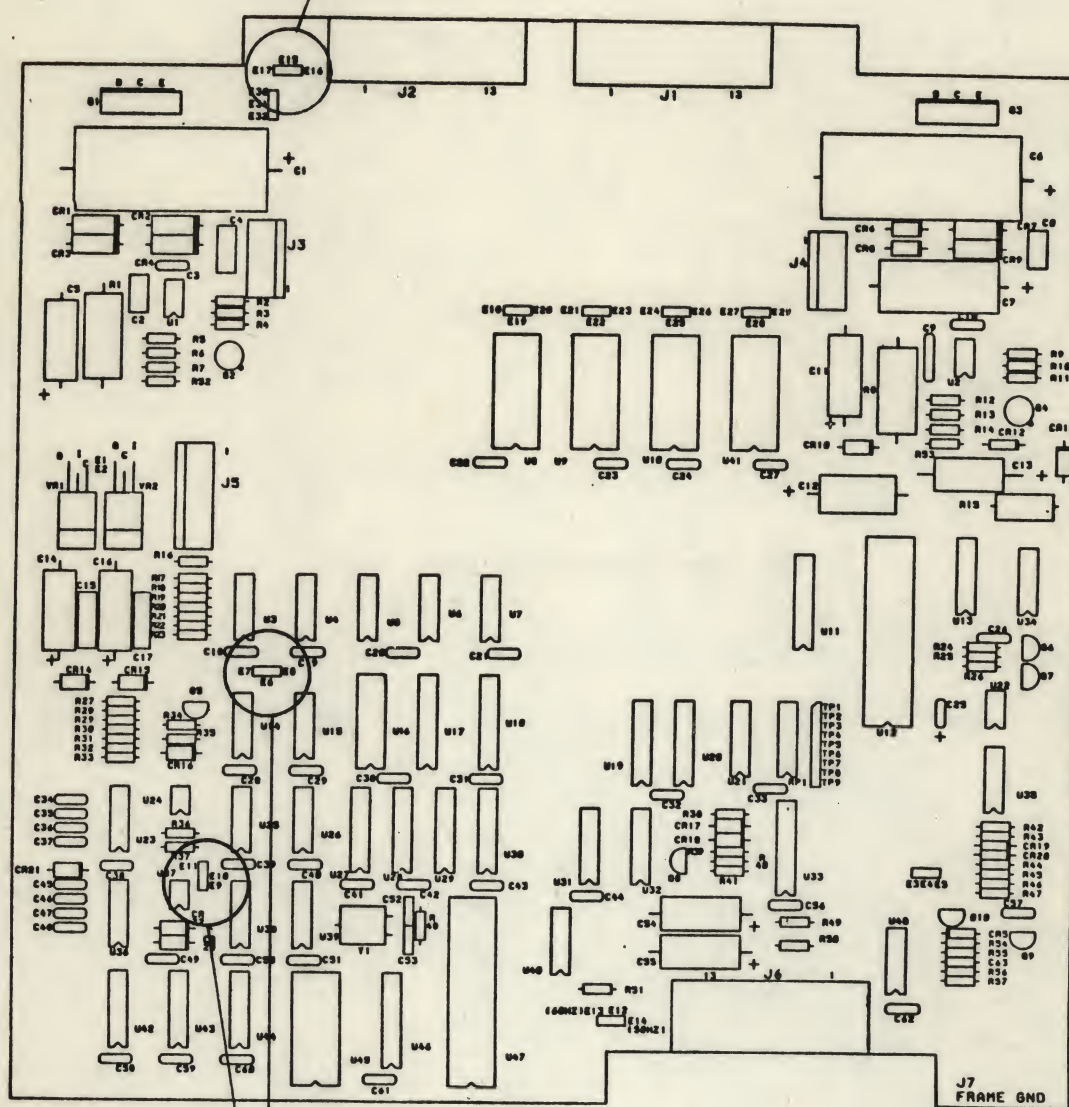
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	↑	↓	←	→
!	"	#	\$	%	&	'	(	)	=	?	É	≥	BREAK		
→	Q	W	E	R	T	Y	U	I	O	P	Å	Ü	BACK SPACE	DELETE	
CTRL	A	S	D	F	G	H	J	K	L	Ö	Ä	←	*/		
SHIFT	Z	X	C	V	B	N	M	;	:	-	SHIFT	↓			
ESC	CAPS LOCK									CONTROL	FUNCTION	SETUP			

PFI	PF2	PF3	PF4
7	8	9	-
4	5	6	,
1	2	3	ENTER
Ø	.		

SW10 INTERNATIONAL SWEDISH/FINNISH

PRINTER CONNJUMPERING

Monitor pin 20 (DTR) E15 to E16
 Monitor pin 19 (SC RTS) E15 to E17

ATTRIBUTEJUMPERING

Half Intensity E6/E8 and E9/E11
 Reverse Video E6/E7 and E9/E10

Jumper Locations

This page intentionally left blank



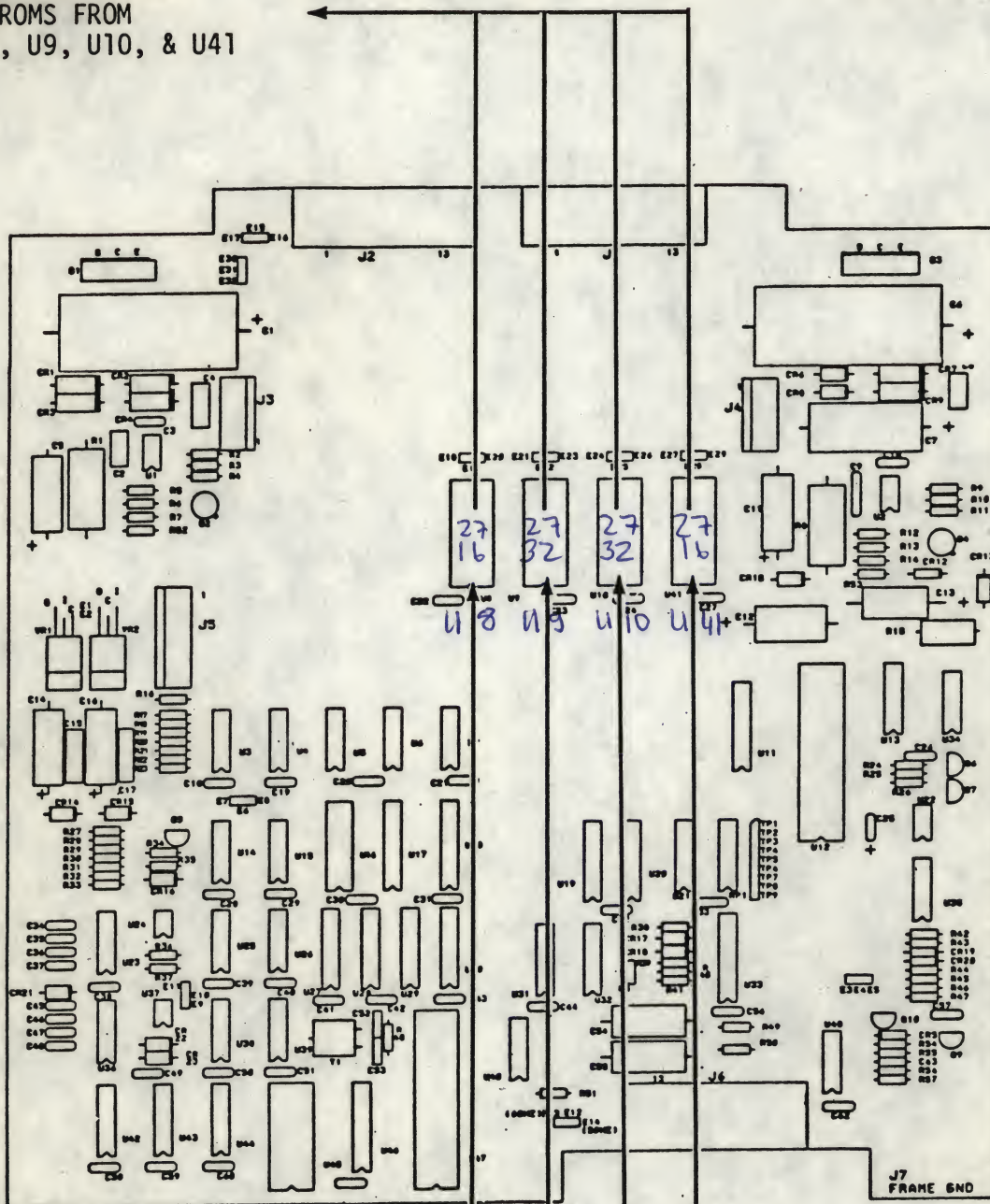
General Terminal Corporation

**14831 Franklin Avenue
Tustin, California 92680**

INSTRUCTIONS FOR CHANGING SW10 FIRMWARE

①

REMOVE THE FOUR
EPROMS FROM
U8, U9, U10, & U41



②

INSTALL THE NEW
EPROMS AS INDICATED

920XXX-XXX

920098-131

920098-231

920098-331

